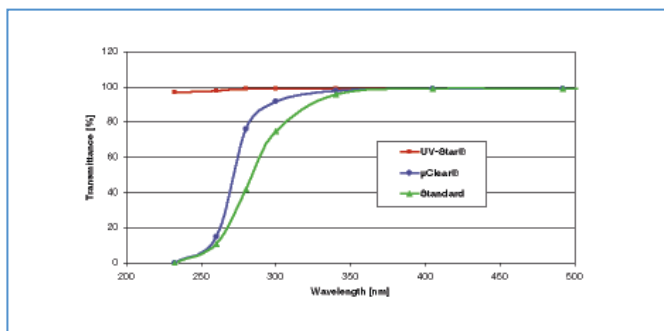


# UV-Star® Microplates

UV/VIS spectroscopy is a classical analytical method for determining the chemical constitution of a substance and its concentration in aqueous solution. UV/VIS spectroscopy is usually conducted in quartz glass cuvettes. However, cuvettes do not provide sufficient throughput when dealing with large amounts of samples, and microplates can be used to speed up work.

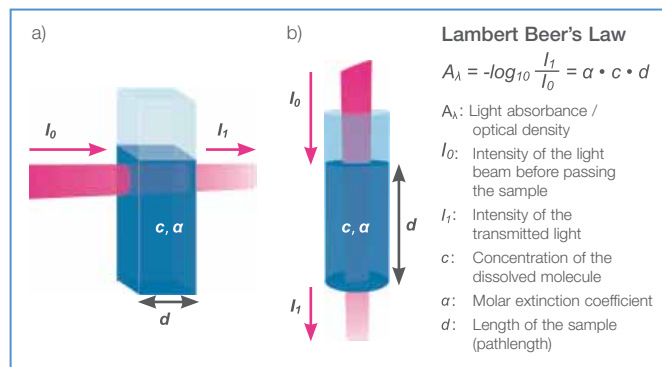
Standard polystyrene microplates are only partially suitable for transmission measurements in the UV. Polystyrene absorbs UV especially in the short-wavelength range (< 320 nm).  $\mu$ Clear® microplates with a thin polystyrene film base already have much lower background values and can be used up to 340 nm without any problem. The adaptation of the patented  $\mu$ Clear® process technology to a new, innovative UV-transparent material has made it possible to produce microplates that extend the transmission range up to 230 nm (Fig. 1).



**Figure 1:** Light transmission of UV-Star® and  $\mu$ Clear® microplates compared with a conventional microplate

For the determination of nucleic acid and protein concentrations at 260 nm or 280 nm without background interference UV-Star® microplates are the ideal alternative to expensive and fragile quartz glass plates or cuvettes. UV-Star® plates are also DMSO-resistant and can be stored at -20 °C without any problem.

In accordance with Lambert Beer's Law, the amount of absorbed light in a sample is proportional to the concentration and layer thickness (i.e. pathlength) of the substance to be measured (Fig. 2).



**Figure 2:** Lambert Beer's Law. Fixed pathlength in a cuvette (a) compared to a variable pathlength in a microplate well (b).

In classical spectral photometry with quartz glass cuvettes, measurement is made horizontally with a set pathlength of usually 1 cm. Given a known coefficient of extinction and a standardised distance of travel, the concentration of a substance can be determined without standards, although a large amount of sample is required to completely fill a cuvette.

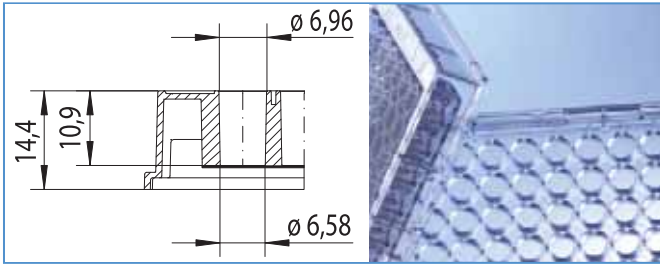
After measurement, the sample measured is only of limited further use as a result of the risk of contamination. In the case of concentration determinations in microplates, the measurement is made vertically and the layer thickness of the sample to be measured is dependent on the sample volume (Fig. 2). Even with smaller sample volumes, the resulting layer thicknesses are sufficient for precise measurement. At a constant sample volume, concentrations can be determined with the aid of a calibration curve. In the case of a varying sample volume, the layer thickness can either be calculated mathematically (→ Technical Appendix) or determined optically taking into account the absorption of water in the infrared range [1].

[1] Rieger, A., Hale, P.D.: Übertragung spektralphotometrischer Daten von Küvetten auf Microplatten [Transmission of spectral photometric data from cuvettes to microplates]. LaborPraxis, 05 (2002): 72 – 76

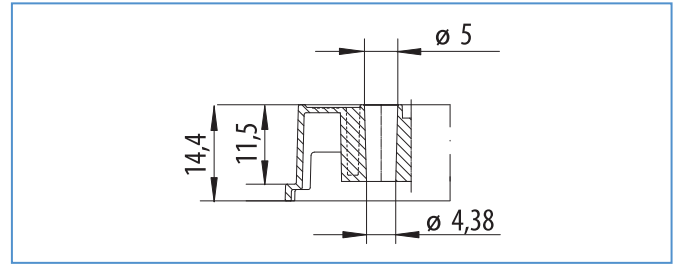
**!** Further information on UV/VIS spectroscopy  
 → **Application Note “UV/VIS Spectroscopy”**  
 (F073 041)

**Well Profile**

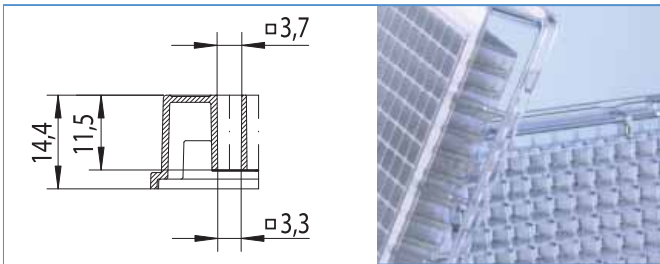
Well profile of a standard 96 and 384 well UV-Star® microplate (Fig. 3 and Fig. 4) and well profile of 96 well half area UV-Star® microplate (Fig. 5):



**Figure 3:**  
Well profile: 96 well UV-Star® microplate  
Total volume: 392 µl  
Working volume: 25 – 340 µl



**Figure 5:**  
Well profile: 96 well half area UV-Star® microplate  
Total volume: 199 µl  
Working volume: 15 – 175 µl  
Standardised pathlength (1 cm = 170 µl, 0.5 cm = 80 µl)



**Figure 4:**  
Well profile: 384 well UV-Star® microplate  
Total volume: 131 µl  
Working volume: 15 – 110 µl

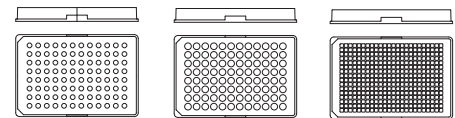
**96, 384 Well UV-Star® Microplates**



**96, 384 Well UV-Star® Microplates**

- Optical window down to 230 nm ideal for nucleic acid determinations at 260 nm/280 nm
- For measurements of protein concentration at 280 nm

Free of detectable DNase, RNase, human DNA non-pyrogenic



Cat.-No.	675 801	655 801	781 801
Well format	96 well	96 well	384 well
Well profile	half area	F-bottom/ chimney well	F-bottom
Bottom	µClear®	µClear®	µClear®
Colour	clear	clear	clear
Sterile	-	-	-
Lid	-	-	-
Quantity per bag/case	10/40	10/40	10/40